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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,634	08/25/2003	Russell C. Zahorik	3131.6US (96-1119.06/US)	3991
24247	7590	10/05/2005	EXAMINER	
TRASK BRITT			VINH, LAN	
P.O. BOX 2550			ART UNIT	
SALT LAKE CITY, UT 84110			PAPER NUMBER	

1765

DATE MAILED: 10/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/647,634

Applicant(s)

ZAHORIK ET AL.

Examiner

Lan Vinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Preliminary Amendment

1. The Preliminary Amendment, filed 1/23/2004 has been entered

Response to Amendment

2. Applicant's Terminal Disclaimer, filed 7/28/2005, with respect to the Double Patenting Rejection of claims 1-19 have been fully considered. The rejection(s) have been withdrawn.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-7, 10-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimomura et al (US 5,922,620)

Shimomura discloses a polishing method for controlling the polishing rate using ionized water. The method comprises the steps of:

providing a polishing/etchant-dispensing apparatus having an inlet thereto for an polishing/etchant agent and a pipe/tubular member 51 having at least one thin annular edge thereon (col 5, lines 10-15, fig. 6)

placing an area of the wafer within an opening/annular member of the pipe 51 of the polishing/etchant-dispensing apparatus, the opening of pipe 51/thin annular edge located adjacent a portion of the wafer (fig. 5)

aligning the wafer and the polishing/etchant-dispensing apparatus (fig. 6)

dispensing a polishing slurry/ etchant onto an area of the wafer-by using the dispensing apparatus (col 5, lines 60-62)

removing the polishing slurry/etchant by mixing the polishing slurry with ionized water and the ionized water is exhausted through the exhaust pipe 54 (col 6, lines 18-23)

Since Shimomura discloses using the same claimed steps as well as the same claimed structural limitations, as per claim 1, in a method to minimizes metal contamination (col 3, lines 39-41), then under the theory of inherency, the steps employed by Shimomura would inherently clean material from the wafer as the claimed invention

Regarding claims 2-4, fig. 6 of Shimomura shows that the wafer is aligned in a substantially perpendicular position in relation to the dispensing apparatus.

Regarding claims 4-6, fig. 6 of Shimomura shows that the opening of pipe 51/thin annular edge is aligned in a substantially perpendicular to a portion of the wafer

Regarding claim 7, Shimomura discloses using the invention for minimizing metal contamination (col 3, lines 21-23)

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Regarding claims 10-11, Shimomura discloses the step of rinsing/cleaning the wafer surface with ionized water (col 6, lines 33-36)

Regarding claim 12, Shimomura discloses supplying a polishing slurry/liquid (col 5, lines 10-12)

5. Claims 13-15, 18-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Shimomura et al (US 5,922,620)

Shimomura discloses a polishing method for controlling the polishing rate using ionized water. The method comprises the steps of:

chemical mechanical polishing a wafer (col 5, lines 23-25)

providing a polishing/etchant-dispensing apparatus having an inlet thereto for an polishing/etchant agent and a pipe/tubular member 51 having at least one thin annular edge thereon (col 5, lines 10-15, fig. 6)

placing an area of the wafer within an opening/annular member of the pipe 51 of the polishing/etchant-dispensing apparatus, the opening of nozzle 51/thin annular edge located adjacent a portion of the wafer (fig. 5)

aligning the wafer and the polishing/etchant-dispensing apparatus (fig. 6)

dispensing a polishing slurry/ etchant onto an area of the wafer-by using the dispensing apparatus (col 5, lines 60-62)

removing the polishing slurry/etchant by mixing the polishing slurry with ionized water and the ionized water is exhausted through the exhaust pipe 54/a portion of the dispensing apparatus (col 6, lines 18-23)

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Since Shimomura discloses using the same claimed steps as well as the same claimed structural limitations, as per claim 13, in a method to minimize metal contamination (col 3, lines 39-41), then under the theory of inherency, the steps employed by Shimomura would inherently selectively remove a material from a wafer as the claimed invention.

Regarding claim 14, fig. 6 of Shimomura shows that the wafer is aligned in a substantially perpendicular position in relation to the dispensing apparatus, the opening of nozzle 51/thin annular edge is aligned in a substantially perpendicular to a portion of the wafer.

Regarding claim 15, Shimomura discloses using the invention for minimizing metal contamination (col 3, lines 21-23).

Regarding claims 18-19, Shimomura discloses the step of rinsing/cleaning the wafer surface with ionized water (col 6, lines 33-36).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 8, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimomura et al (US 5,922,620) in view of Iwashita et al (US 5,722,875).

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Shimomura method has been disclosed above. Shimomura differs from the instant claimed inventions as per claims 8, 16 by removing Cu from the wafer instead of a refractory metal

Iwashita, in a method for polishing a wafer having a material formed thereon, discloses that the material can be Cu or tungsten/refractory metal (col 5, lines 13-15)

Thus, one skilled in the art at the time the invention was made would have found it obvious to substitute Shimomura Cu layer with tungsten in view of Iwashita teaching because Iwashita discloses that Cu conductive material may be replaced with tungsten (col 5, lines 14-17)

8. Claims 9, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimomura et al (US 5,922,620) in view of Drill (US 6,190,236)

Shimomura method has been disclosed above. Unlike the instant claimed inventions as per claims 9, 17, Shimomura fails to disclose the step of removing the etchant/slurry by suction and vacuum

Drill discloses a method for polishing comprises the step of removing the etchant/slurry by suction and vacuum (col 7, lines 1-3)

Since Shimomura is directed to a CMP method, one skilled in the art at the time the invention was made would have found it obvious to modify Shimomura method by adding the step of Shimomura of removing the etchant/slurry by suction and vacuum as per Drill because Drill discloses that the vacuum removal system increases the period of

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time a polishing pad may be utilized in the CMP machine before incurring a time consuming down time for polishing pad change out (col 6, lines 17-21)

Response to Arguments

9. Applicant's arguments filed 7/26/2005 have been fully considered but they are not persuasive.

Applicants argue that Shimomura reference fails to disclose using the steps in the invention to clean material from the wafer and for selectively removing a material from the wafer as required in the amended claims 1 and 13 because Shimomura merely discloses dispensing of a polishing slurry for a CMP process. This argument is unpersuasive because it is noted that the added limitations of "to clean material from the wafer" and "for selectively removing a material from a wafer" are functional and intended use limitations. It is also noted that "when the prior art fails to disclose a functional limitation, the examiner may be able to rely on the theory of inherency", *Ex parte Levy*, 17 USPQ2d, 1464 (Bd. Pat. App. & Inter. 1990). In this case, Since Shimomura discloses using the same claimed steps as well as the same claimed structural limitations (liquid slurry/etchant-dispensing apparatus, a nozzle/tubular member having one thin annular edge, as per claim 1, in a method to minimizes metal contamination (col 3, lines 39-41), then under the theory of inherency, the steps employed by Shimomura would inherently clean material from the wafer/ selectively removing a material from a wafer as the claimed inventions. In addition, "where functional language is used in a process, the burden shifts to applicants to established

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that the reference does not inherently function in the manner required by the claims. Ex parte Bylund 217 USPQ 492 (PO BdPatApp 1981). « If the prior art fails to discuss the intended use and the examiner has a basis for asserting that the prior art product is capable of performing in the claimed manner, the claims should be rejected " In re Schreiber, 44 USPQ2d 1429 (Fed. Cir. 1997)

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan Vinh whose telephone number is 571 272 1471.

The examiner can normally be reached on M-F 8:30-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571 272 1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



LV
October 3, 2005